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NEW THYSANOPTERA FROM CUBA

By DUDLEY MOULTON
San Francisco, California

TEREBRANTIA, 1836

Family THRIPIDAE, Uzel

Anaphothrips alternans, Bagnall
(Euthrips alternans, Bagn.)

Taken on leaf roll of *Panicum barbinode*, August 24, 1926, (Moulton No. 1845) and *Panicum maximum*, August 30, 1926, by Mr. L. S. Scaramuzza (Moulton No. 1846), both at Baragua, Cuba, and on *Saccharum officinarum*, September 28, 1927, by Mr. H. P. Plank at Central Jaronu, Cuba, (Moulton No. 2604).

This is the first record of this species having been found in North America, having been known heretofore only from Egypt.

Bregmatothrips venustus, Hood

Numerous specimens of this species were taken in the leaf rolls of *Panicum barbinode*, August 24, 1926 (Moulton No. 1845) and on *Panicum maximum* on August 30, 1926 (Moulton No. 1846). Both collections were made by Mr. L. C. Scaramuzza at Baragua, Cuba.

There seems to be no record of the male which was found to be quite as numerous in these collections as was the female. The specimens before me are brachypterous and colored like the brachypterous females as in the original description. This extends the habitat of the species to Cuba.

Thrips panicus, Moulton, n. sp.

Female holotype. Color of head and thorax brown with much reddish orange hypodermal pigment. Abdomen yellow at base, shading to yellowish gray in segments three to seven, two distal segments blackish brown. Antennal segments one, two and five

to seven dark brown with five lighter at extreme base, three yellow, four yellow, shading to light grayish brown. Legs yellow. Wings brownish gray in second and third quarters. All prominent body spines clear yellow.

Total body length 1 mm.; head, length .126 mm., width .126 mm.; prothorax, length .12 mm., width .135 mm.; pterothorax, width .165 mm.; abdomen, width .165 mm. Segments of antennae: length (width) I, 18 (27); II, 27 (21); III, 36 (20); IV, 45 (18); V, 33 (15); VI, 51 (16); VII, 21; total length 240 microns. Length of spines: interocellars 21 μ, pair at posterior angles of prothorax 45 μ, on ninth abdominal segment 135 μ, on tenth 135 microns. Wing spines, fore vein 3-10-2, hind vein 14.

Head as wide as long, slightly projecting in front of eyes, cheeks almost parallel. Interocellar spines placed anterior to posterior ocelli and slightly inward, a series of four or five smaller ones posterior to eyes. Eyes in dorsal view longer than wide and occupying about .4 the side of the head. Intermission approximately twice the width of a single eye. Ocelli fully developed. Antennae twice as long as head, segments four and six distinctly longer than others with six longer than four, style almost half as long as four.

Prothorax of about equal length and width with head. A pair of prominent spines on each posterior angle with one smaller spine between each pair and three others along either side of posterior margin. Mesothorax wider than metathorax. Legs moderately stout. Wings fully developed, with spines as follows: costa 20, fore vein 3-10-2, hind vein 14.

Abdomen long and slender with segments three to eight of almost even width, nine and ten greatly reduced, ten with clearly defined dorsal suture over entire length.

Type Material: Female holotype and 13 female paratypes taken on sugar cane at Molokai, T. H., January 25, 1929 by Mr. O. H. Swezey and on *Panicum maximum* at Baragua, Cuba, August 30, 1926 by Mr. L. C. Scaramuzza. Types in author's collection, one paratype deposited with the Hawaiian Entomological Society at Honolulu. (Moulton Nos. 1846 and 3272.)

Type Locality: Molokai, T. H.

This species is distinct from all other members of the genus known to me because of the shape of the head, produced somewhat in front of the eyes as found in the genus *Chirothrips* and by the arrangement of spines on the fore vein of fore wings,

there being three basal spines, a series of nine or ten distributed over the center of the wing and two at the tip. The series of distal bristles in *T. minutissimus*, Linn. is not broken at end as in this species. The long sixth and slightly shorter fourth antennal segments are also characteristic. A new genus might be erected to include this species but for the present I am placing it in the genus *Thrips*.

TUBULIFERA, 1836

Family PHLOEOTHRIPIDAE, Hood
Subfamily *Phloeothripinae*, Priesner
Tribe *Hoplothripini*, Priesner

Eurythrips cornutus, Moulton, n. sp.

Female holotype: Color chestnut-brown with head, prothorax and tip of abdomen somewhat darker. Antennal segment one and two concolorous with head, pedicel of three yellow, remainder of segment three and four to eight dark brown. Legs concolorous with body, joints lighter, all tarsi yellow. Wings uniformly brownish gray. All prominent spines clear yellow except only the large curved wing retaining spines which are dark brown.

Total body length 1.82 mm.; head, length .183 mm., width .13 mm.; prothorax, length .13 mm., width, including coxae, .25 mm.; pterothorax, width .30 mm.; abdomen, width .36 mm.; tube, length .135 mm., width at base .075 mm. Segments of antennae: length (width) I, 39 (33); II, 45 (30); III, 60 (30); IV, 60 (30); V, 57 (25); VI, 57 (24); VII, 42 (22); VIII, 30; total length 390 microns. Length of spines: postoculars 60 μ, on anterior angles of prothorax 60 μ, mid-laterals 60 μ, on posterior angles, outer 60 μ, inner 72 μ, on ninth abdominal segment 105 μ, at end of tube 90 microns.

Head 1.5 times longer than width across cheeks, front of head narrowed into a triangular process projecting in front of eyes and bearing antennae. Cheeks strongly constricted immediately behind eyes and with a prominent short, broad-seated horn-like growth immediately behind the constriction, behind this the cheeks are roughened and slightly arched. The surface within the ocellar triangle is shaded to appear distinctly reticulate and the entire head is stippled with white dots but without markings. Postocular spines approximately as long as eyes, with broadly dilated tips. Eyes moderately small, with large facets, outer surface including only four or five facets. Ocelli placed far for-

ward, posterior ocelli clearly contiguous with anterior inner margins of eyes, as large as facets of eyes. Mouth cone short and broadly rounded, extending not over half way across prosternum. Antenna more than twice as long as head, segments three to six each with narrowed pedicel, seven with wider pedicel, eight broadly joined to seven but distinct. The prothorax has long and fully developed spines as follows: one at each anterior angle, one in the middle of each side and a pair at each posterior angle, those along anterior and posterior margins are vestigial. All prominent spines with dilated tips. The suture which separates the plate at each posterior angle of the prothorax is incomplete, it curves backward, outward and ends abruptly in front of inner prominent angular spine. These plates are thus coalesced with the pronotum.

Pterothorax with evenly formed sides. Legs reasonably short, fore femora not noticeably enlarged, fore tarsi unarmed except for the long hook-shaped claw. Wings fully developed but short, reaching only to base of fifth abdominal segment, without double fringe hairs.

Abdomen considerably wider than pterothorax. The posterior pair of wing-holding spines on segments three to seven inclusive strongly developed and dark brown in color, anterior pair weak. Tube about .7 as long as head and twice as long as width at base.

Type Material: Female holotype, one female paratype collected April 15, 1927 by Mr. L. C. Scaramuzza from an unknown host plant. Types in author's collection. (Moulton No. 1852.)

Type Locality: Baragua, Cuba.

This species appears to be most closely related to *E. macrops*, Hood, found in Florida, but separated from it as follows: postocular spines about .33 as long as head, sides of head clearly constricted behind eyes, cheeks arched, fore tarsi unarmed. Tube .7 as long as head. Postocular spines half as long as head in the species *macrops*, sides of head almost straight and parallel, fore tarsus armed with a minute tooth and tube as long as head. The abdomen is rather widely distended in the holotypic specimen while in a second paratype it is contracted and the total body length is 1.2 mm., and in this latter specimen the wings reach to the eighth abdominal segment.

Eurythrips varius, Moulton, n. sp.

Female holotype. Color of head, thorax and last three abdominal segments dark brown, segment two light yellowish brown,

three to seven gradually becoming darker. Legs dark brown with all tarsi and tips of all tibiae yellowish, fore wings darkened at base, only slightly grayish beyond, antenna uniformly dark brown except pedicel of three which is yellow.

Total body length (abdomen distended) 1.66 mm.; head, length .18 mm., width .144 mm.; prothorax, length .13 mm., width including coxae .25 mm.; pterothorax, width .28 mm.; tube, length .144 mm., width at base .072 mm. Segments of antennae (beyond second segment): length (width) III, 57 (33); IV, 54 (33); V, 54 (28); VI, 54 (27); VII, 45 (27); VIII, 36; total length 390 microns. Length of spines: postoculars 69 μ, prothorax, at anterior angles 60 μ, mid-laterals 54 μ, at posterior angles 75-75 μ, on ninth abdominal segment 195 μ, at end of tube 120 microns.

This species was found in the same collection with *E. cornutus,* previously described but may be separated by the following characters: head slightly constricted behind eyes, cheeks arched only a little and without short, horn-like projections immediately behind eyes. Facets of eyes small, not over half as large as ocelli. Each fore tarsus armed with a short tooth. Wings darkened at base only and clear or slightly gray colored beyond. First two or three abdominal segments lighter than the rest of the body. Spines on the ninth abdominal segment and at tip of tube are much longer than in the former species, namely 195 and 120 m. as compared with 105 and 90 m. respectively. This species is separated from *E. cinctus,* Hood by its clearly dilated-tipped spines and from *harti,* Hood by the shorter postocular bristles and armed fore tarsi. In *harti* the postocular bristles are pointed, .5 as long as head and fore tarsi are unarmed. It may also be separated from *E. macrops,* Hood by the darker brown color of legs, the lighter shading of wings beyond the basal fifth and the shorter tube.

Type Material: Female holotype collected April 15, 1927 from an unknown host plant by Mr. L. C. Scaramuzza. Types in author's collection. (Moulton No. 1852 B.)

Type Locality: Baragua, Cuba.

Eurythrips fuscipennis, Moulton, n. sp.

Female holotype. Color chestnut brown with fore legs and tips of middle and hind tibiae and middle and hind tarsi almost clear yellow. Antenna uniformly dark brown, except segments

one and two which are lighter and base of three which is yellowish, wings uniformly grayish brown.

Total body length 1.48 mm. (abdomen distended); head, length .166 mm., width .14 mm.; prothorax, length .12 mm., width including coxae .25 mm.; pterothorax, width .283 mm.; abdomen width .30 mm.; tube, length .135 mm., width at base .075 mm. Segments of antennae: length (width) I, 30 (33); II, 45 (30); III, 54 (30); IV, 48 (30); V, 51 (27); VI, 48 (28); VII, 42 (27); VIII, 39; total length 360 microns. Length of spines: postoculars 54 μ, on anterior angles of prothorax 51 μ, mid-laterals 60 μ, on posterior angles, outer 66 μ, inner 60 μ, on ninth abdominal segment 120 μ, at end of tube 90 microns.

This species resembles *E. cornutus,* rather closely but is at once separated by the strong, broad-seated tooth on fore tarsus, sides of head almost straight and parallel, and the intermediate antennal segments are shorter. It may be separated from *macrops,* Hood by the shorter postocular bristles and the position of the ocelli which are placed far forward and clearly separated from the inner anterior margins of eyes, also the fore tarsal tooth is large and distinct in this species. The tube is much shorter than head, while in *macrops,* the tube is equal to the length of the head.

Type Material: Female holotype taken April 15, 1927 from an unknown host plant by Mr. L. C. Scaramuzza. Type in author's collection. (Moulton No. 1852 C.)

Type Locality: Baragua, Cuba.

The three new species described in this article were all collected from the same host plant at the same time.

Cornutus and *fuscipennis* are closely related but apparently distinct in that the former has unarmed fore tarsi and a projection behind each eye and the latter has a clearly developed tarsal tooth. *Varius* has differently formed eyes, the facets are smaller and more compact, the wings are dark only at the base and lighter beyond, while in *cornutus* and *fuscipennis* the wings are almost uniformly light grayish brown. *Varius* also has much longer spines on the ninth abdominal segment and at tip of tube. The postoculars and principal spines of the prothorax are long and have clearly dilated tips in all three of these species. Fore wings are without double fringe hairs and the posterior wing-holding spines are strong while the anterior ones are weak.

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CITRUS INSECTS OF NORTHEASTERN ARGENTINA*

I found plenty of pure old Florida red scale in that section of the country (near Corrientes). I saw grapefruits, oranges and lemons just covered with the Florida red scale. Saw some trees it had almost killed. It is a little strange we don't have any Florida red scale here in the eastern half of the Province of Corrientes and Misiones but have the California red scale instead. The California red scale has been brought into this section only in the past four or five years when they first began to bring citrus trees in here from Australia. Groves of Australian trees are the only places we find California red scale present. I found plenty of this scale when I first came down here on Australian trees which had arrived in this country and had been planted out only about ten days. Some of the trees were just covered with adult scales showing that they had come from Australian nurseries on the trees. I haven't seen any of the California red scale on any of the native trees here yet which proves that it has just been recently introduced into the country. Purple scale and snow scale are plentiful here in the old native citrus groves.

I have also found what I suppose to be the citricola scale. It too seems to be confined to the young groves of Australian trees. It deposits honeydew which makes the twigs and leaves become very black with sooty mold. It is a dirty-brownish-colored, soft-bodied scale, somewhat flat, large and oblong. It confines itself to the twigs and mostly the veins of the leaves. Ants and flies are nearly always about the tree where it is present. It seems to almost completely cover the limbs of young trees and the

*From letter of M. M. Reed to Dr. E. W. Berger, July 2nd, 1929.

trees are always very sooty-black and filthy. The growth of the tree is also very badly retarded.

I believe I also wrote you that we have the snow scale here and the common old purple scale which is always so plentiful in Florida citrus groves.

The rust mite seems to be even worse here than in Florida. Guess it is because no sulphur dusting or other means of controlling them have ever been practiced here.

We are in our mid-winter down here now. Seems that it should be Christmas instead of almost July 4th.

We had several heavy frosts here with some ice during June. Not any damage to citrus but some young nurseries in low lands suffered some by cold.

Such diseases as gummosis and foot rot are very bad here among old citrus groves.

They have one disease here that I have been watching closely and learning all I can about it. It is very fatal to citrus trees. This disease is called "Lepra explosiva." It seems to be a fungus disease. I have seen plenty of it but it would be hard to describe to you in a letter. No doubt you know something of the disease but I don't think it has ever been found anywhere in the State of Florida.

I saw plenty of heavy sandy soil and black soil there (southern border of Paraquay) similar to Florida soils. Also went into the section where some cotton is being produced. Saw new bales of cotton and cotton seed being loaded on river steamboats for the Port of Buenos Aires. I examined the cotton. It was not nearly as pretty and white as our southern U. S. A. cotton.

NOVEMBER MEETING OF THE SOCIETY

The Society met in the Agricultural Building on November 22nd, with nine members and two visitors present. Messrs. R. D. Whitmarsh and H. A. Bess were elected to membership. The address of the meeting, by Dr. O. C. Bryan on the classification of Florida soils, was given upon the request of several members interested in the ecological distribution of the plant and animal life of the region. Dr. Bryan stressed the relation of the soils to the biota.

THE SCARABAEIDAE OF FLORIDA

By W. S. BLATCHLEY
Dunedin, Florida

(Continued from page 56)

125. (13542). **P. aemula** Horn.

Length 21-23 mm. Oblong-oval, robust; brown, distinctly pruinose, clothed with fine short prostrate hairs; clypeus emarginate, both it and front coarsely punctate; sides of thorax obtusely angulate, subcrenate. Male with penultimate ventral vaguely impressed; both spurs of hind tibiae of male in this and all remaining species of the genus free and slender.

Haulover (Sz. Ms. and Fall). Described from northern Georgia.

126. (13544). **P. crenulata** (Froel.).

Length 17-20 mm. Oblong; brown, feebly shining, clothed with short yellowish prostrate hairs and often a few intermixed erect ones; margin of thorax strongly crenate. Male with antennal club as long as the funicle and penultimate ventral vaguely concave.

"Florida, teste Ulke, Smith and Schaupp" (Sz. Ms.).

127. (13548). **P. parvidens** (Lec.).

Length 19-23 mm. Oblong-oval; brown or reddish-brown, subopaque, slightly pruinose, sparsely pubescent with erect hairs on head, thorax and base of elytra; thorax closely punctate, sides feebly serrate behind the middle. Male with penultimate ventral slightly flattened, granulate at middle, pygidium broader than long.

Tampa (Sz. Ms.); St. Augustine (Ham.). Gainesville, one at light April 4 (Doz.); May 25 (P. B. Coll.). Enterprise (Dietz); St. Petersburg (Fall).

*127a. (——). **P. parvidens-hysteropyga** (J. J. Davis), 1920, 336.

Differs from typical *parvidens* mainly in size, the length being only 15-16 mm., and the bulk half that of the typical form.

Sanford, March 25 (Bl.).

128. (13549). **P. pygidialis** (Schffr.), 1906, 257.

Length 17 mm. Oblong, broader behind; brown, shining; clypeus flat, distinctly emarginate, both it and front coarsely and densely punctate, and with numerous erect hairs; thorax finely and closely punctate, clothed with long fulvous hairs; elytra very coarsely punctate. Male with pygidium feebly convex, asperately punctate, the margin of apex reflexed; last three ventrals coarsely asperately punctate at middle.

Type from Indian River, Fla. No other record.

129. (13556). **P. quercus** (Knoch).

Length 14.5-16 mm. Oblong, subcylindrical; reddish-brown, subopaque, pruinose, head darker; antennae 9-jointed and surface glabrous in this and

the next species; clypeus emarginate. Male with antennal club as long as the stem; penultimate ventral slightly impressed and granulate at middle.

Centreville (Sz. Ms.); no other record.

130. (13559). **P. clypeata** (Horn), 1887a, 283.

Length 16.5-18 mm. Oblong, slightly broader behind; rufotestaceous, moderately shining; clypeus entire; thorax distinctly narrowed in front. Male with club longer than funicle; last ventral flat, granulate behind middle, its front border slightly thickened; spurs of hind tibiae unequal, the outer the longer and more slender.

Occurs in Georgia and Florida (Horn); Enterprise (Fall).

131. (13563). **P. tristis** (Fabr.).

Length 11.5-15 mm. Elongate-oblong, slightly broader behind; brownish-yellow, shining; elytra sparsely clothed with short, semi-erect hairs, thorax with longer erect hairs; antennae 10-jointed; clypeus concave, entire, coarsely, sparsely punctate. Male with antennal club not longer than stem; penultimate ventral with a short acute transverse ridge near front border; last ventral with front margin elevated and a ridge prolonged backward at middle.

Haulover, very rare in March (Sz.). Ft. Barrancas, Apr. 9 (Ag. Coll.). A widely distributed species but apparently very scarce in Florida.

Genus XXVIII. POLYPHYLLA Harris

Large, elongate robust species ornamented with stripes of pale pubescence and having the third joint of antennae long, the club of male composed of seven long, very flat plates; thorax without a front marginal line; side pieces of metathorax very large; ventral segments six, connate.

*132. (13623). **P. occidentalis** (Linn.).

Length 22-25 mm. Pale brownish-yellow; thorax with a narrow median line and elytra each with suture and three stripes of white pubescence; clypeus truncate; front tibiae bidentate in both sexes.

Jacksonville (C. & L.); Lake City (Agr. Coll.); Gainesville, on pine, April 25-May 31 (Doz.); St. Petersburg (Schf.). Dunedin, June 10, July 11 and August 17, at porch light (Bl.).

*133. (13626). **P. gracilis** Horn, 1881. 75.

Length 19 mm. Pale brown, thorax with three stripes formed of whitish scale-like hairs; elytra sparsely clothed with similar hairs which form a stripe on sides. Front tibiae of male without teeth, the outer apical angle alone prolonged; of female bidentate.

Described from Jacksonville. Gainesville, uncommon on pine, April 28-May 20 (Doz.); Enterprise (Dietz); Tampa (Sz.); Dunedin, March 27-April 10, beaten from young pine (Bl.).

Genus XXIX. DICHELONYX Harris

Elongate, slender, piceous or brownish-yellow species with a greenish, purplish or bronzed lustre and clothed with a fine silky pubescence; eyes large, prominent; labrum free, deeply emarginate; tarsal claws chelate, cleft at tip. Male in Florida species with club as long as funicle. The beetles occur mostly on foliage of pine and oak and flowers of plum and wild rose.

134. (13649). **D. elongata** (Fabr.).

Length 8-10 mm. Elongate, sides subparallel; head and thorax dark reddish-brown; elytra dull brownish-yellow or reddish-brown with a greenish or purplish lustre; clypeal suture wanting, margin narrowly reflexed; sides of thorax subangulate; front tibiae tridentate.

One specimen from Florida without definite station. (Ag. Coll.).

Genus XXX. MACRODACTYLUS Latreille

Elongate, slender brownish beetles, densely covered with clay-yellow scales and having the labrum free; front coxae prominent, conical; hind legs, especially the tarsi, long and slender; claws long, diverging, cleft at tip; ventral segments six, not connate.

135. (13686). **M. angustatus** (Beauv.).

Length 9-11 mm. Dull brownish-yellow; tips of tibiae and tarsal joints piceous. Male with hairs of thorax prostrate; prosternal process short, not visible from the front; front and hind tibiae without spurs; female with hairs of thorax erect on middle of disk; middle of abdomen with many erect hairs arising from coarse punctures; front and hind tibiae with spurs.

Florida (Schaupp); Enterprise (Dietz).

Genus XXXI. HOPLIA Illiger

Small oblong, subdepressed species having the body entirely or in part covered with flat scales of variable color; labrum concealed, very short; scutellum very small; tibiae with one spur; front and middle tarsi usually with two chelate unequal claws, the outer one the larger and bifid at tip; hind tarsi with one claw. The sexes often differ much in size and color. They live on flowers by day and beneath cover at night.

*136. (13696). **H. mucorea** Germ.

Length 6-6.8 mm. Sexes similar. Head, thorax and abdomen piceous; elytra reddish-brown, sparsely clothed with oval yellow scales; thorax wider in front of base, sides strongly angled at middle; front and middle tarsi with two claws; claw of hind tarsi not cleft.

Sand Point, one specimen in February (Sz.); Enterprise

(Dietz); Gainesville, May 19 (Fall). Ormond, Sanford and Dunedin, March 25-April 15 (Bl.); taken from flowers of cactus and at light.

137. (13698). **H. equina** Lec.

Length 7.5 mm. Sexes similar. Brown, not densely clothed with small oval ochreous scales; sides of thorax broadly rounded; outer claw of front and middle tarsi wholly lacking; claw of hind tarsi cleft near tip.

Ormond, in Slosson Coll. (Leng Ms.).

*138. (13699). **H. floridana** Fisher, Can. Ent. 1918, 140.

Length 9-10 mm. Sexes dissimilar. Male, black, shining, sparsely clothed with short semi-erect lanceolate hair-like scales; clypeus almost vertical, subquadrate, coarsely punctate; sides of thorax strongly angulate at middle, feebly concave behind middle; hind femora and tibia much swollen; front and middle tarsi with two claws; claw of hind tarsi not cleft. Female reddish-brown, sparsely clothed with round flat scales, those on pygidium oval, dense.

Types from Lake Wales; taken on citrus foliage.

Subfamily **RUTELINAE**

The members of this subfamily of Scarabaeidae and those which follow comprise the division Pleurosticti of Lacordaire and Leconte, and differ from those already treated mainly in the position of the abdominal spiracles, the majority of which are placed on the dorsal parts of the ventral segments and there forming strongly diverging rows, the last spiracle being visible behind the elytra, which do not cover the pygidium. In addition, the Rutelinae have the ligula corneous and fused with the mentum to form a single plate; labrum free; antennae 9- or 10-jointed, club 3-jointed; head and thorax unarmed in both sexes; tarsal claws unequal, the inner one usually much more slender than the other. In general facies they resemble closely the Melolonthinae, and like them are phytophagous, living mainly on the foliage of trees and shrubs. The subfamily is represented in Florida by two tribes and eight genera.

KEY TO TRIBES OF FLORIDA RUTELINAE

a. Antennae 9-jointed; mandibles concealed; elytra with a membranous margin. Genera XXXII-XXXV. Tribe ANOMALINI.

aa. Antennae 10-jointed; mandibles usually visible beyond the clypeus; elytra without a membranous margin. Genera XXXVI-XXXIX. Tribe RUTELINI.

Genus XXXII. ANOMALEPTA Casey

Very small, oblong or oval species having the ligula small, narrow, entire at tip; clypeus short, trapezoidal, deeply concave;

front angles of thorax acute; body covering thin, pale; tarsal claws entire.

*139. (13707). **A. semilivida** (Lec.), 1878. 403.

Length 6-6.5 mm. Oblong, parallel; head black, clypeus piceous; thorax with a large piceous median area; elytra usually wholly pale; thorax not twice as wide as long, narrowed in front, sides subparallel; elytra conjointly one third longer than wide, sides parallel; alternate intervals slightly convex with scattered punctures.

Described from Tampa and Capron; "common in March and April in the pine woods, flying shortly before sunset" (Sz.). Gainesville on beggar weed, Aug. 13 (Doz.); Sanford (Wick.); St. Petersburg (Fall). Ft. Myers, at light (Dav.). Key West (Schf.). Dunedin, frequent in March and April, on the foliage of shrubs in recently burned-over ground (Bl.).

140. (13708). **A. flaccida** Csy., 1915, 10.

Length 6.6 mm. Differs from *semilivida*, according to Casey, in having the "form more oval; clypeus wholly pale yellow; thorax twice as long as wide, with sides more rounded; elytra conjointly not longer than wide, the intervals all nearly flat, the second with an irregular row of punctures."

"Florida, the locality unrecorded" (Casey). Probably only a variety of *semilivida;* a specimen taken with *semilivida* at Ft. Myers by Davis has a yellow clypeus and shows other intermediate characters.

Genus XXXIII. ANOMALA Samouelle

A large genus of rather small dull yellow species, possessing the characters of the subfamily and tribe, and having the ligula large and broad, sinuate at tip; thorax with a basal marginal line; mesosternum flat between the coxae, the metasternal suture always evident; elytra not submarginate at base or deeply striate, the striae punctate, the surface rarely with metallic lustre; large claw of the front and middle tarsi usually cleft at tip.

141. (13713). **A. servilis** Csy., 1915, 16.

Length 8 mm. Oblong-oval, stout, widest behind middle; black or piceous, elytra pale near the scutellum which is broadly margined, legs reddish-brown; thorax three-fourths wider than long, rather finely, irregularly and sparsely punctate; elytra with intervale irregular in width, the second with punctures broadly confused.

Described from a single male, taken at Jacksonville; no other record.

142. (13714). **A. ludoviciana** Schffr.

Length 8-8.5 mm. Oblong-oval; head, thorax and scutellum dark red-

dish-brown, elytra dull yellow, the large irregular punctures darker; under surface and legs brown, both with numerous long hairs; clypeus deeply concave, margins broadly reflexed; elytra very irregularly and unevenly punctate, only those punctures on sides in somewhat regular rows; tarsal claw of front and middle tarsi feebly cleft much below the tip.

Florida, without definite station (Csy, 1915, 17). Described from Louisiana and, as *A. pubescens* Blatch., from Indiana.

143. (13715). **A. minuta** Burm.

Length 6-6.5 mm. Oval, rather robust; color very variable, sometimes wholly black, often in great part testaceous; clypeus deeply concave; larger claw of front tarsus simple in both sexes, very small, never cleft as in our other species.

Capron, Sanford and Enterprise (Sz.); Marion Co. (Fall).

143a. (13715a). **A. minuta mendica** Csy., 1915, 20.

Differs from the preceding in its narrower, less convex form, and wholly black color; punctuation everywhere stronger.

Marion Co., Florida (Csy.); Gainesville (Schf.); Brookers (Ag. Coll.).

*144. (13730). **A. undulata** Melsh.

Length 8.5-9.5 mm. Dull brownish-yellow; disk of thorax piceous; elytra usually with a curved row of piceous spots across the middle and another at apical third, the spots often merged to form a cross-bar, sometimes reduced to a single spot at apical third; larger claw of front tarsi cleft nearly to base in male, only near tip, female, its supporting joint not toothed beneath.

Common throughout the State; recorded from eight stations and at hand from seven others, including Ormond, Royal Palm Park and Key West. About Dunedin it hibernates in bunches of Spanish moss and occurs on elder in early spring. The *A. varians* of the Schwarz list is a synonym.

145. (13731). **A. nigropicta** Csy., 1915, 33.

Length 7.8-9.5 mm. "Larger, more convex and more elongate; pale luteo-flavate, shining; head rufous, black basally; thorax black, pale at sides; elytra never with a small rounded subapical spot, but with two irregular fasciae of detached elongate spots; thorax three-fifths to two-thirds wider than long, surface smoother, punctures, much fewer and sparser than in *undulata;* tarsal claws as in *undulata.*" (Csy.).

"North Carolina and Kentucky to Lake Worth, Florida" (Csy).

*145a. (13731b). **A. nigropicta floridana** Csy., 1915, 33.

Length 8.4 mm. Shorter and more reddish than *nigropicta;* clypeus smaller and shorter, wholly reddish, nearly semi-elliptical; female with inner claw of front tarsi bifid only in apical fourth or fifth.

Type a female from Key Largo. Royal Palm Park, March 20, one beaten from dead limbs (Bl.).

146. (13732). **A. innuba** (Fabr.).

Length 6-7.5 mm. Dull yellow with front, large spot on thorax and one to three transverse rows of spots on elytra, piecous, sometimes wholly black or piceous, shining; outer or larger claw of front and middle tarsi cleft; the claw joint toothed on under side.

Pennsylvania and Florida (Csy.). No definite station record.

146a. (13732a). **A. innuba piceola** Csy., 1915, 35.

Length 7.8 mm. "Uniform piceous-brown; thorax shorter and elytra longer than in *innuba*." (Csy.).

Florida (Csy.).

*147. (13736). **A. parvula** Burm.

Length 7.5 mm. Elongate, subcylindrical; dull yellow, vertex and two subapical thoracic spots darker; elytra coarsely punctate, subrugose, the costae indistinct; larger claw of front tarsi very slightly cleft below the tip; pygidium sparsely punctate.

Lake Lucy and St. Petersburg (Schf.). Dunedin, May 25, at porch light (Bl.).

148. (13737). **A. exigua** (Sz.), 1878, 362.

Length 4-4.5 mm. Oblong-oval, convex, shining, glabrous; head and thorax piceous with greenish reflections; elytra dull yellow, sides fuscous, the alternate more elevated, intervals a brighter yellow; thorax narrowed in front, sides strongly rounded, not angulate at middle; hind tarsi much longer than tibiae; front tibiae not dentate, the outer apical angle much prolonged; larger claw of front and middle tarsi bifid at tip.

Types taken in May from oak shrubs on the sand hills east of Lake Altapopka, Sumter Co. No other record. Described as a *Strigoderma*.

Genus XXXIV. PACHYSTETHUS Blanchard.

Species larger and with thicker body covering than in *Anomala*, the surface with metallic lustre; thorax without a basal marginal line; mesosternum with a polished protuberance between the rather widely separated middle coxae, the metasternal suture wanting; larger claw of front and middle tarsi cleft in both sexes.

*149. (13739). **P. marginata** (Fabr.).

Length 12-15 mm. Oval, robust; head and disk of thorax green or reddish-brown; sides of thorax and under surface and femora dull yellow; elytra reddish-brown; entire surface except the yellow areas with a greenish metallic lustre; elytral striae deep, punctate; intervals narrow, convex.

Common throughout the State; recorded from numerous stations and at hand from nine others including Ormond, and Key

West. About Dunedin it begins to appear in February on grape and other foliage, and later on is often taken at light. The "Fla." record of *P. incolumis* Csy., in the Leng Catalogue, should be "Pa."

Genus XXXV. STRIGODERMELLA Casey.

Very small, oblong, subdepressed species, having the lateral elytral striae irregular and confused, not deep and distinct throughout as in the larger species of *Strigoderma* with which our only species was formerly listed.

***150. (13750). S. pygmaea** (Fabr.).

Length 4.6-5.2 mm. Head and thorax black, usually with a greenish tinge; under surface and legs piceous; elytra blackish-piceous, usually with a scutellar spot and some oblong spots on the intervals, dull yellow, sometimes pale with only the suture and outer margins dark; front tibiae with a short tooth and long acute spur; hind tibiae shorter than either the femora or tarsi.

Tampa, common in April (Sz.). Gainesville, abundant on various weeds, corn and cotton, April 20-August (Doz.). Sanford and Crescent City (Wick.); Gulfport and Miami (Fall); La Grange and Ft. Myers (Dav.). Frequent at Dunedin in April on the new growth in recently burned-over tracts. The *S. floridana Ohaus,* described from Titusville, Fla. is considered by Schæffer (1907, 72) to be a synonym of *pygmaea.*

Genus XXXVI. PELIDNOTA MacLeay.

Large, convex, dull reddish-brown species having the clypeus fused with the front, the suture absent; mandibles emarginate or bidentate on outer side; thorax in this and the next genus with marginal line at base. This genus and the next three comprise the tribe Rutelini, characterized as in the tribal key.

151. (13755). P. punctata Linn.

Length 20-25 mm. Oblong-oval; clypeus, thorax and elytra dull reddish-brown, glabrous; occiput, scutellum, under surface, pygidium and legs black, strongly shining, with a darker greenish lustre; in typical *punctata* (Linn.) the thorax with a small black spot at middle of each side, and usually three smaller spots on sides of each elytron; in var. *notata* Blanch., these spots absent.

Enterprise, common in May (Sz.); Biscayne Bay and Buck Key (Sz. Ms.); Gainesville, at light in May (Doz.). Ft. Myers, Everglade and Parish (Dav.). Though Leng retains *notata* Blanch. as a var. of *punctata,* Casey does not mention it in his revision of the genus (1915) and it is usually regarded as a mere color form.

*152. (13757). **P. lutea** (Oliv.).

Length 20-22 mm. Differs from *punctata* in having the head, legs and tarsi wholly pale, under surface brown with greenish lustre very faint, the dark spots on thorax and elytra very small (var. *brevicollis* Csy.) or wanting; pygidium pale with transverse scratches more distinct than in *punctata*.

Florida (Csy.); Jacksonville, var. *brevicollis* (Csy., 1915, 74). Lake City and Centreville (Ag. Coll.). Dunedin Feb. 19-June 20; Ft. Myers, March 9 and R. P. Park, June 15, taken mostly at light. All my specimens have the black spots of thorax and elytra evident but very small. The majority of the State records of *punctata* probably belong to *lutea*.

Genus XXXVII. COTALPA Burmeister.

Very similar to *Pelidnota* in form and size, differing mainly in having the clypeus distinctly separated from the front, paler color and dense pubescence of under surface.

153. (13769). **C. lanigera** (Linn.).

Length 20-26 mm. Broadly oval, convex, robust; head, thorax and scutellum greenish or yellowish with a strong metallic sheen; elytra dull yellow, less shining; under surface piceous, bronzed, the sterna and sides of abdomen densely clothed with long white hairs.

Jacksonville (C. & L.). This is the only Florida record, though the beetle doubtless occurs over the northern fourth or more of the State.

(To be continued)

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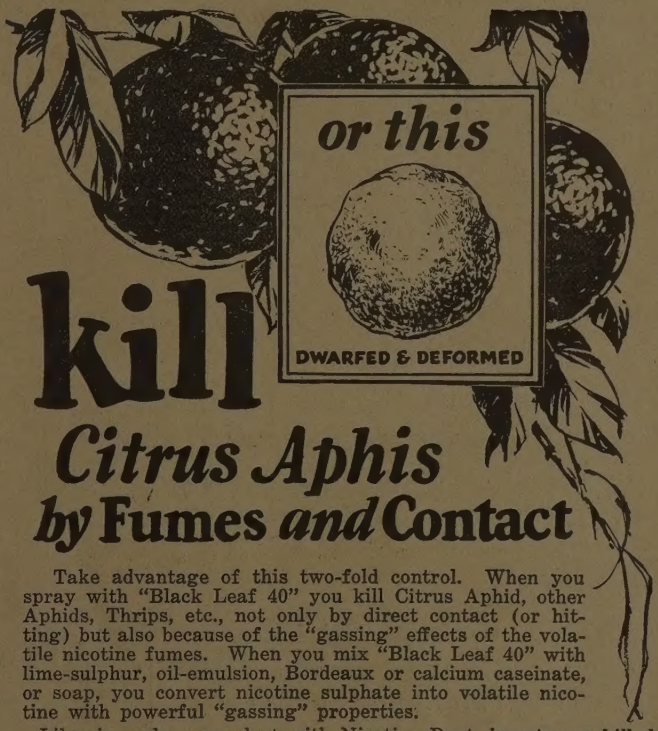

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